

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1-8 and 20 are cancelled.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 9-13, 15-19, and 21-25 are now pending in this application.

Rejections under 35 U.S.C. § 102

Claims 1, 2, 4-6, and 8 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,120,575 (hereafter "Arvidsson et al."). Claims 1, 2, 4-6, and 8 have been cancelled. Withdrawal of this rejection is respectfully requested.

Claims 1-13, 15, 16, and 21-25 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,332,904 (hereafter "Fujiki et al."). This rejection is respectfully traversed as it may be applied against amended claims 9 and 13.

Amended claim 9 recites "[a] sintered body produced by preparing a metal powder mixture, lubricating a die with a die lubricant, compressing the metal powder mixture in the lubricated die to form a green compact and sintering the green compact and having a sintered structure of sintered metal particles, the metal powder mixture consisting of a metal powder having a particle size of 75 μm or smaller, a graphite powder in an amount 0.1 to 0.3% (see Examples 2 & 3 of the present application) by mass and a powder lubricant in an amount of 0.2 to 0.80 % (see Example 2) by mass based on a total mass of the metal powder mixture, and the sintered metal particles having a maximum particle size of 100 μm or smaller."

Amended claim 13 recites a production method of a sintered body that consists essentially the steps of “preparing a metal powder mixture, the metal powder mixture consisting essentially of a fine metal powder having a particle size of 75 μm or smaller, a graphite powder in an amount of 0.1 to 0.3 % by mass and a powder lubricant in an amount of 0.2 to 0.80 % by mass based on a total mass of the metal powder mixture,” applying a die lubricant to a die, “compressing the metal powder mixture into the die to provide a green compact,” and “sintering the green compact, wherein the sintered body has a sintered structure of sintered metal particles of 100 μm or smaller in maximum particle size.”

Fujiki et al. discloses a mixed powder metallurgy process that forms a compact “...by mixing 0.5% graphite, 0.5 to 0.7% zinc stearate as lubricant, alloyed micro powder and mother steel powder.” See Office Action at page 3. Fujiki et al. further discloses mixing prealloy steel powder with a diameter of 60 to 100 μm . See Fujiki et al. at col. 5, lines 33-35. Fujiki et al. fails to disclose a sintered body produced from a mixture containing 0.1 to 0.3% by mass graphite powder. Nor does Fujiki et al. disclose a mixture with such a graphite amount in combination with a lubricant “in an amount of 0.2 to 0.80 % by mass.” Nor does Fujiki et al. disclose the application of a die lubricant to a die before compressing a metal powder mixture in the die to provide a green compact. Therefore, Fujiki et al. fails to disclose all of the limitations recited by claims 1 and 13.

The sintered body of the present application can be easily formed with a sintered structure of particles having a maximum sintered metal particle size of 100 μm or smaller by compressing metal powder in a lubricated die while controlling the particle size of the metal powder and the composition of the metal powder. This creates a sintered body with a reduced pore size, higher strength, and abrasion resistance. As shown by Examples 2 and 3 in the Table of Applicants’ specification, the sintered body can achieve fatigue strengths of over 500 MPa. In comparison, samples 1 and 2 of Fujiki et al. achieve fatigue strengths of 29 kgf/mm^2 (284 MPa) and 28 kgf/mm^2 (274 MPa), respectively. See Figure 2 of Fujiki et al.

For at least the reasons noted above, withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 18-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujiki et al. in view of U.S. Patent No. 6,344,169 (hereafter "Tsuchida et al."). Claims 18 and 19 depend from claim 13. Tsuchida et al. fails to remedy the deficiencies of Fujiki et al. In particular, Tsuchida et al. fails to disclose, teach, or suggest a mixture with "a graphite powder in an amount of 0.1 to 0.3 % by mass," or a mixture with such a graphite amount in combination with a lubricant "in an amount of 0.2 to 0.80 % by mass." Nor does Tsuchida et al. provide disclose, teach, or suggest compressing a powder mixture in a lubricated die while controlling the particle size of the sintered metal particles. Withdrawal of this rejection is respectfully requested.

Claim 17 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujiki et al. in view of U.S. Patent No. 6,120,575 (hereafter "Arvidsson et al."). Arvidsson et al. is not alleged to and, in fact, fails to remedy the deficiencies of Fujiki et al. Withdrawal of this rejection is respectfully requested.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

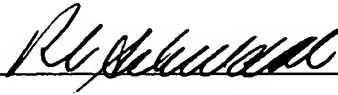
The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Atty. Dkt. No. 023971-0357

Respectfully submitted,

Date 1/23/06

By 

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